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ABSTRACT

Rural Alabama high school freshmen and sophomores collected and analyzed data about community drinking water supplies in a social science research project designed to acquaint them with health care issues in their communities. Students interviewed government and business leaders, health care professionals, and residents in three rural counties. In a public forum students reviewed socioeconomic, demographic, and political characteristics of each county, assessed health care systems, presented investigation results, and discussed solutions and implications for community planning, health care systems, and social structures. Students learned basic social science research skills, gained self-confidence, learned to work with others, began to think critically about issues in their counties, and demonstrated that they could successfully assume the role of community researchers. The student project was part of the Biomedical Sciences Preparatory Program (BioPrep) of the University of Alabama's College of Community Medicine. BioPrep's purpose has been to develop academic and social skills in rural high school students so that they will be motivated and able to seek admission to and progress successfully through college toward a health sciences career and then return to rural Alabama to practice. The BioPrep program is described and student-obtained research data are presented in nine tables. (LFL)

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ASSESSING THE QUALITY OF LIFE IN RURAL ALABAMA:

RESULTS OF HIGH SCHOOL STUDENTS' COMMUNITY INVESTIGATION

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The Biomedical Sciences Preparation Program (BioPrep) of The University of Alabama's College of Community Health Sciences was established to address these problems in Alabama, whose rural areas are even more lacking in health manpower and are comparatively poorer, less well educated, and less healthy than those of other states, as measured by standard health and socioeconomic indicators.[3] An experimental program, its purpose has been to develop rural disadvantaged Alabama high school students academically and socially so that they will be motivated and able to seek admission to and progress successfully through college, specifically in prehealth professional, health professional, or biomedical sciences curricula. At the same time, the project was conceived to nourish in its participating students a desire to return to rural areas of Alabama to establish their professional careers. To pursue these primary aims of BioPrep the following goals were established for the high school students participating in it: a) acquire the sound scholastic background requisite to being admitted to a college or university and successfully completing its undergraduate curriculum; b) develop personal academic competencies in mathematics, sciences, and oral and written communication appropriate for and directed toward careers in the biomedical sciences; c) understand the nature and elements of the health care system and the professional roles that exist within it; and d) develop an appreciation of the values of rural living and the important role of a health care provider or biomedical professional practicing in a rural setting.

BioPrep is currently in its third year of operation in five high schools in three rural Alabama counties. The pilot group of students, which numbered 114 when the project began, is now in its junior year.

These students have participated in special accelerated curricula and related additional experiences that began in the ninth grade. The coursework and other activities of the program have focused primarily on the science, mathematics, and language/communication competencies needed for university admission and subsequent academic success. Interwoven with these have been instruction and experiences in the elements and processes of the health care system and the values of rural life. The special curricula have been conducted during regular school hours, during block time, and have included directed and independent study, tutorials, and significant laboratory work. Field placements and bimonthly special Saturday sessions on the University of Alabama campus and other locations, and full-time summer programs constitute complementary activities that have taken place outside the normal school hours.

BIOPREP RESEARCH DESIGN

To assess the process and outcomes of BioPrep a research design incorporating two control groups for each of the five schools was established before the beginning of the first academic year of the program. An internal control group was assigned for each project school; it consisted of a matched sample of tenth graders selected from each project school whose academic performance would be followed through the course of their high school career, beginning with the ninth grade. In addition, an external control group was created for each project school. It provided a matched sample of students from a rural school in another county school system selected for its comparability to the BioPrep school in socio-economic and cultural demographic characteristics. Data collected from students, parents, and other individuals associated with the project

schools and their two control groups is therefore being collected and analyzed longitudinally to address the research questions of the project.

One set of research questions deals with student progress in academic, social, and personal development. Included among the characteristics or elements relating to student progress in BioPrep, and implicit in the overall objectives of the program, are developing an appreciation of one's own community in particular and the value of rural living in general as integral parts of modern society; and acquiring an added interest in as well as a basic understanding of medicine, health care, and the health care system. A coordinated series of instructional and evaluation activities implemented during the students' sophomore year dealt directly with these characteristics. Central to the activities designed for the students was an emphasis on acquiring basic social science research skills and then applying those skills in an organized investigation of the students' own counties. Some of the results of this student research project, conducted as part of the overall BioPrep research design, form the bases for this paper.

STUDENT RESEARCH METHODS

Community involvement has been an important focus from the beginning of BioPrep. On one level, local education officials were consulted to tailor the program to meet the needs and conditions of each county school system. Parents were informed of program goals and were invited to become active participants in many of the BioPrep activities. On a broader level, each community was considered to be a resource to foster students'

understanding of community structure and function, to help them learn about various professional roles in the community, and to provide them a base of knowledge about issues and problems in community health.

The community-oriented educational objectives of the 9th and 10th grade years included understanding health and general problems in rural communities; understanding roles of health care and county professionals in the community; understanding basic ecological relationships between the natural world and daily human life; exploring the community for historical background; and investigating problems and benefits or rural lifestyle. A variety of opportunities was presented the students to meet these objectives. During the 9th grade year, community resource personnel were invited to lead class discussions, students used an outdoor experiential learning approach to make classroom material more relevant, and a camping experience in an Alabama national forest tied ecological principles to human health concerns.

During the sophomore year the focus on community involvement intensified. Through special sessions conducted at the University of Alabama throughout the school year, and correlative activities conducted in class in their own schools, students learned to delineate a problem area, to formulate a research question or hypothesis, to develop questionnaires to investigate hypotheses, to collect data using interview techniques, to code and analyze data, and to arrive at conclusions based on data analyses. Since Alabama does not requrie any social studies courses during the tenth

grade, the research and community-oriented activities of the 1983-84 school year and summer program were designed to provide the students with intensive hands-on experiences in the social sciences.

In addition to their introduction to research the students learned to view individual health in terms of a person's physical, mental, and social well-being, and community health in terms of the inter-relationships that exist among these individual health dimensions and various conditions in the community. In linking human biology, lifestyle, and surrounding environment they considered such community aspects as population, environmental quality, economic activity, transportation systems, public education programs, and local government.

The summer program allowed the students to apply their skills in data collection and analysis by conducting an on-site investigation of several aspects of community health care in their respective counties. The students' community investigations focused on problems related to drinking water supply. This subject was chosen because it was a health-related issue of current concern to citizens in the counties. It also lent itself to realizing certain distinctions between rural and urban living, and constituted an opportunity for direct student involvement in a genuine problem-solving situation.

Students examined such questions as the type and history of health problems associated with drinking water supply, obstacles to correcting associated problems, community capabilities for addressing their water supply needs, citizen knowledge about related health matters, public

opinion and understanding regarding aspects of drinking water supply, and possible solutions and their implications for long-term community health.

In conducting their research the students interviewed government officials, business leaders, and health care professionals in their communities. Using an open-ended interview schedule they explored the roles of various governmental departments, social service agencies, and business organizations in determining the quality of life in the county. Although all three counties had the same basic research design, each study took on unique characteristics as the designs were adapted to the problems and resources of each county.

The students also interviewed county residents in the courthouse, grocery stores, shopping areas, and "on-the-street" using a short structured interview schedule. In addition to collecting demographic information, the students used these interviews to learn the opinions of individuals regarding the major problems and the quality of life in their county. The results of these "citizen interviews" could then be compared with some of the responses given by the local leaders and officials in the "agency" interviews.

Since one of the goals of BioPrep is to increase students' understanding of the health care system, that area was emphasized in both the structured and unstructured interview schedules. The relationships between and among the environment, the health care system, and government policies and regulations were examined, using problems of water supply as a means of eliciting some of those relationships.

RESULTS OF STUDENT INVESTIGATIONS

The students collected a substantial amount of data during the course of their community investigations. During the last week of the summer session they began to compile and analyze the data and described preliminary results in a public forum held on the University's campus. In the forum students from each county presented:

a) A general review of the structure/organization of the county (or community most immediately affected by the issues under study), including an assessment of legal, financial, educational, and public service strengths and weaknesses, as well as a summary of relevant demographic factors.

b) An assessment of the system of health care organizations provided in the study area, including preventive, curative, and rehabilitative services.

c) A presentation of the results of their issue investigation, including statistical analyses, graphics, photos, and other information presenting factual findings. These were organized to also allow presentation of conclusions reflecting the various interrelationships between aspects of the study issues, aspects of community and health care system organization, and other factors such as projected growth trends, politics, etc.

d) A discussion of possible solutions to identifiable problems, and related implications for the future. This discussion included

such factors as considerations for defining long-term community health, planning for a balance between human needs and maintenance of the natural environment, evaluating the problems and benefits of urban vs. rural living, and some reflections on differences in preferred lifestyles, social structures, and value systems.

Data gathered by the students through their surveys closely fit actual demographic data of the three counties (Table 1). The majority of their respondents rated the quality of life in their counties as average (Table 2), although blacks rated quality of life significantly lower than did whites (Table 3). Students found the performance of county government rated average or above by most respondents (Table 4), both black and white (Table 5). Availability of health care was rated average or below by the majority of respondents in the two poorest counties (Table 6), while blacks in all counties rated such availability significantly lower than did whites (Table 7). Students found these same patterns in the respondents' assessments of the quality of health care in their counties (Tables 8 and 9).

Students from the predominantly black county used the analysis of the current status of their community to project the situation that might exist in it by the year 2000. They categorized their four major findings as related to unemployment, lack of reliable health care, inefficiency in government, and racial issues. The students felt the lack of cooperation between blacks and whites affected all the other issues to some degree. They discovered that many city and county officials, black and white, were not well informed about current local problems and, in some cases, were

unconcerned as well. Through extensive interviews with health care personnel, both professional and paraprofessional, they realized that the lack of confidence in the health care system, as reported on the citizen survey, was probably unfounded. The basic problems seemed to result from the ratio of patients to doctors which made it very difficult, if not impossible, to maintain the quality of medical care that the few physicians practicing in the county would have liked.

They also discovered that industrial growth for growth's sake was not what they would wish for their county. Interviews with the elders of the community and the students' own experiences traveling the back roads and canoeing the rivers of their county helped them to determine that planned and controlled growth should be the aim of county developers.

They still saw the year 2000 as being bright and prosperous for the county. They saw a population increase (as opposed to the decrease of the past several years) that would include an equal number of blacks and whites. They saw farming again becoming an important part of the quality of life with truck farming and catfish farming replacing the more traditional farms. Industrial growth could be contained in several planned industrial parks. Health care facilities would be expanded and the number of family physicians increased to served the growing population. They saw education as a way to improve government and citizen attitudes. Most importantly, they saw the rural character of their county as something valuable and worthy of preserving.

Students from the second county, one approximately racially balanced, found many of the same problems as did their peers in the predominately black county, i.e., unemployment, inefficiency in government, lack of trust in the local health care facilities. These students also felt that lack of citizen education and qualifications of educational personnel was a major problem. They saw a lack of usable water as a deterrent to industry locating in the county.

However, the students looked to the future with optimism. They felt that unemployment would decrease when industry saw that the water resources of the county could be improved to fulfill their needs. The recreational aspects of the county were viewed as ways to provide jobs as well as to offer attractions for people to move into the county.

They felt strongly that they (the BioPrep students) represented an important asset to the future of their county. By raising their own standards as students and future citizens of the county, they felt that they could affect the level of education, the level of concerned governmental participation and, ultimately, the level of health care in the county.

Students in the predominately white rural county rated misuse of natural resources and land as one of the main problems facing their county now and in the future. They felt that the increase in county population was a critical factor in the loss of prime farm land to developers of subdivisions. They questioned whether the demands of society were

sufficient reasons to justify the loss of forests, swamps, and wildlife, a loss which will ultimately change the county's ecological structure.

The county school system was also a cause for concern for the students. Lack of qualified teachers and inadequate funding for school personnel and facilities were viewed as primary problems - ones that promised to increase in severity if government officials continued to view education as a low budgetary priority.

Although unemployment was considered one of the biggest problems facing this county according to the citizen interview, the BioPrep students felt that bringing in new industry without regard for pollution control was not the best way to produce more jobs.

Health care in the county was determined adequate for now by the respondents to their citizen survey. The students felt that low income families would suffer in the future from rising health care costs and from ignorance about the need for and use of available health services.

Ninety percent of the citizens who completed the survey rated the quality of life in this county above average. The students concluded that if this quality was to be maintained, an informed public that was aware of problems that come with blind progress was necessary.

SUMMARY

Although the research project of the summer session did not result in complete research reports, the efforts of the students, parents, community leaders, county residents, and project staff members led to a program that

was, for the most part, a success. The students learned some of the basic skills needed for social science research and used them to gather information regarding the quality of life in their county. Through interviews and classes, they learned a great deal about their own county and about some of the major problems facing it.

As they explored the issues they found unfolding the students gained self-confidence and learned to work with others. They learned to ask questions of officials and of people on the street; they learned to express their opinions and to respect the opinions of others. They exhibited politeness and good manners, even with people who had different philosophies and who were sometimes rude to them. They showed respect for finding out about the "old ways" and enthusiasm for learning the "new ways." They began to debate the issues they were shaping and showed a willingness to learn as much as possible about the ways their counties worked. The overwhelming majority of the students were eager to learn and to do a good job. They behaved accordingly and created a positive image of the BioPrep program in their communities.

Many of the students anticipated that the two in-county weeks would be a waste of time, particularly because they had spent most of the previous year's summer session on the University's campus. They seemed to change that opinion as the summer program progressed. They were exposed to new learning activities and to many different kinds of people, and most of them benefited from the experience. They began to do some critical thinking about issues which currently affect their counties and which are likely to

have an even greater impact in the future. As they learned about the problems, they became interested in solving them and in planning for the future.

With the help of interested community leaders and health care professionals this kind of program can be replicated in other rural areas of the country. The experience in Alabama demonstrated that students at this level can readily and successfully assume the role of community researcher and, as a result, can become directly involved in creating a positive future for rural living and rural health in their own communities.

REFERENCES

[1]U.S. Department of Health, Education, and Welfare, GMENAC Staff Papers, "Social and Psychological Characteristics in Medical Specialty and Geographic Decisions," DHEW Publication No. (HRA) 78-13.

[2]Progress and Problems in Improving the Availability of Primary Care Providers in Underserved Areas. Report to the Congress of the United States by the Comptroller General. HRD-77-135, August 22, 1978.

[3]Alabama's Vital Events for 1982. Montgomery, AL: Alabama Department of Public Health, Special Services Administration, Bureau of Vital Statistics, 1983.

TABLE 1

Student-Obtained Demographic Data

Race of Respondent

	N=406 Co G	N=307 Co H	N=390 Co T	N=1122 Total
Black	84%	50%	23%	53%
White	16%	50%	77%	47%

Highest Educational Level

	Co G	Co H	Co T	Total
Less than High School	18%	26%	14%	19%
High School Diploma	45%	44%	38%	42%
Above High School	37%	30%	49%	40%

Employment Status

	Co G	Co H	Co T	Total
Full-time	51%	51%	57%	52.5%
Other	49%	49%	43%	47.5%

TABLE 2

Quality of Life Ratings

N = 1066

	Co G	Co H	Co T	Total
Excellent	5% (19)	8% (24)	7% (26)	7% (69)
Above Average	15% (59)	13% (40)	27% (101)	19% (200)
Average	56% (215)	56% (169)	59% (221)	57% (605)
Below Average	18% (69)	14% (43)	5% (18)	12% (130)
Poor	7% (25)	9% (26)	3% (11)	6% (62)

$\chi^2 = 61.25$, $p \leq .000$

TABLE 3

Quality of Life, By Race, By Combined Counties

N = 1067

	Black	White	Total
Above Average	20% (109)	32% (164)	26% (273)
Average	56% (315)	57% (288)	57% (603)
Below Average	24% (136)	11% (55)	18% (191)

$\chi^2 = 44.12$, $p \leq .0000$

TABLE 4

Performance of County Government

N = 1048

	Co G	Co H	Co T	Total
Excellent	2% (8)	2% (7)	2% (6)	2% (21)
Above Average	17% (62)	8% (25)	11% (40)	12% (127)
Average	35% (131)	54% (161)	64% (241)	51% (533)
Below Average	25% (94)	23% (67)	17% (62)	21% (223)
Poor	22% (81)	13% (37)	7% (26)	14% (144)

$\chi^2 = 79.64$, $p \leq .0000$

TABLE 5

Performance of County Government, By Race,

By Combined Counties

N = 1048

	Black	White	Total
Above Average	15% (80)	13% (63)	14% (143)
Average	47% (259)	56% (280)	51% (539)
Below Average	39% (212)	31% (154)	35% (366)

$\chi^2 = 9.27$, $p \leq .0097$

TABLE 6

Availability of Health Care in County Ratings

N = 1064

	Co G	Co H	Co T	Total
Excellent	7% (27)	5% (15)	12% (45)	8% (87)
Above Average	14% (56)	14% (43)	40% (148)	23% (247)
Average	46% (179)	54% (161)	38% (142)	45% (482)
Below Average	22% (84)	18% (53)	8% (31)	16% (168)
Poor	11% (42)	9% (26)	3% (12)	8% (80)

$\chi^2 = 123.63$, $p = \leq .0000$

TABLE 7

Availability of Health Care, By Race, By Combined Counties

N = 1062

	Black	White	Total
Above Average	23% (129)	46% (231)	34% (360)
Average	48% (272)	41% (204)	45% (476)
Below Average	29% (163)	13% (63)	21% (226)

$\chi^2 = 79.07,\ p \leq .0000$

TABLE 8

Quality of Health Care in County

N = 1062

	Co G	Co H	Co T	Total
Excellent	6% (24)	6% (17)	17% (62)	10% (103)
Above Average	17% (65)	17% (51)	37% (139)	24% (255)
Average	47% (182)	53% (160)	36% (134)	45% (476)
Below Average	22% (84)	16% (48)	9% (33)	16% (165)
Poor	8% (31)	8% (24)	2% (8)	6% (63)

$\chi^2 = 115.75$, $p \leq .0000$

TABLE 9

Quality of Health Care, By Race, By Combined Counties

N = 1064

	Black	White	Total
Above Average	21% (115)	44% (219)	31% (334)
Average	50% (283)	40% (203)	46% (486)
Below Average	29% (164)	16% (80)	23% (244)

$\chi^2 = 71.31$, $p \leq .0000$